

# Northern Engraving Corporation

## Annual Report for 2002 Regarding the Cooperative Agreement Between NEC and the Department of Natural Resources

On June 10, 2002, following a Public Comment Period and formal public Hearing, the Wisconsin Department of Natural Resources (DNR) and Northern Engraving Corporation (NEC) signed an Environmental Cooperative Agreement that includes the NEC facilities in Sparta and Holmen, Wisconsin. This Agreement was developed under Wisconsin's Environmental Cooperation Pilot Program pursuant to Section 299.80, Wis. Statutes, to evaluate innovative environmental regulatory methods including whole-facility regulation.

### **Background**

NEC manufactures nameplates and other industrial decoratives, using plastic and aluminum as the primary substrates. Presently NEC operates six manufacturing facilities in Wisconsin, Minnesota and Iowa. In addition there are several locations that provide support services to these manufacturing facilities. NEC has been actively involved in waste minimization/pollution prevention since 1988 and has received recognition for its efforts on several occasions including the Governor's Award for Excellence in Hazardous Waste Reduction in 1991 and 2000 and a P/E/P Award in 1994. NEC volunteered to help the DNR pilot new approaches to environmental regulation through the Cooperative Program.

Two NEC facilities are involved in the Agreement. The Sparta facility is located at 803 South Black River Street, Sparta, Monroe County, and the Holmen facility is located at 1023 Sand Lake Road, Holmen, La Crosse County, Wisconsin. The following report reflects the performance evaluation conducted pursuant to the Agreement and annual outcomes from NEC's environmental management system. It has been shared with the Stakeholders Group and is available for public inspection at the NEC offices and local libraries in Sparta and Holmen.

### **Baseline Performance Evaluation**

#### **Regarding the Interested Persons Group:**

The Northern Engraving Corporation Stakeholders' Group is composed of representatives from business, government and academia in Monroe and La Crosse counties who are interested in environmental stewardship and the impact of manufacturing on local communities. During the four meetings held since May 2001, the group surveyed the evolution of environmental law and regulation and reviewed the principles of environmental management as developed under the international standard, ISO 14001. It then examined the outcomes from implementation of the standard at the Sparta, Waukon, Lansing, West Salem and Spring Grove manufacturing facilities. Additionally, Northern Engraving shared information on the shifting of manufacturing capacity, applications for construction permits and the formulation and enactment of the Cooperative Agreement with the Wisconsin Department of Natural Resources.

Group members include the following individuals:

John Burke, Register of Deeds, Monroe County  
Mark Wienkes, Natural Resources Conservation Service, Sparta  
Tim Vernier, Norris/Vernier Motors, Tomah  
Dr. Michael Collins, Viterbo University, La Crosse  
Jordan Skiff, Department of Public Works, Sparta  
Bruce Corning, Northern Engraving Corporation  
Randy Nedrelo, Northern Engraving Corporation

The Stakeholders Group met twice in 2002 (June 10 and September 4). At the June meeting Dr. Collins and Mr. Skiff joined representatives of the Wisconsin Department of Natural Resources and Northern Engraving for the signing of the Cooperative Agreement. Mr. Vernier, Mr. Skiff and the Northern Engraving representatives met in September to review a summary of environmental objectives and outcomes for the manufacturing facilities. They also discussed major corporate manufacturing changes and examined the Sparta facility's outcomes for the 2002 objectives and targets through July. Stakeholders asked about the objectives that are above target and their relationship to product mix and sales. Randy Nedrelo, Northern Engraving, explained that product mix changes might have had an impact on solvent usage. They were impressed that the Volatile Organic Compound\* (VOC) and Hazardous Air Pollutant (HAP) emission results continue to show significant reductions even after the "low hanging fruit" was picked during the first two years of the environmental management system. The reduction in water usage resulting from the recycling of process water was also considered to be outstanding.

The group then discussed the changes in VOC and HAP emissions as compared to changes in sales at West Salem, Spring Grove and Waukon. This showed that the implementation of environmental management system programs significantly reduced VOC and HAP emissions in relationship to sales. If sales grew, emissions continued to fall below the previous levels. When sales fell, emissions fell by a greater percentage than sales.

\*For a glossary of terms see the last page of this report.

### **Regarding Commitments to Superior Environmental Performance:**

The Sparta facility adopted the following Environmental Objectives and Targets for 2002 at Management Review on January 22, 2002:

1. OBJECTIVE: Reduce total facility VOC emissions in 2002 vs. 2001.  
TARGET: 12% reduction by 12/31/02.
2. OBJECTIVE: Reduce total facility HAP emissions in 2002 vs. 2001.  
TARGET: 5% reduction by 12/31/02.
3. OBJECTIVE: Reduce energy consumption in 2002 vs. 2001.  
TARGET: 5% reduction in natural gas consumption by 12/31/02.  
TARGET: 5% reduction in electricity consumption by 12/31/02.

4. OBJECTIVE: Reduce the volume of waste sent to landfills in 2002 vs. 2001.  
TARGET: 10% reduction by 12/31/02.
5. OBJECTIVE: Reduce water usage in 2002 vs. 2001.  
TARGET: 20% reduction by 12/31/02.

The following Environmental Objectives and Targets will be pursued in 2003:

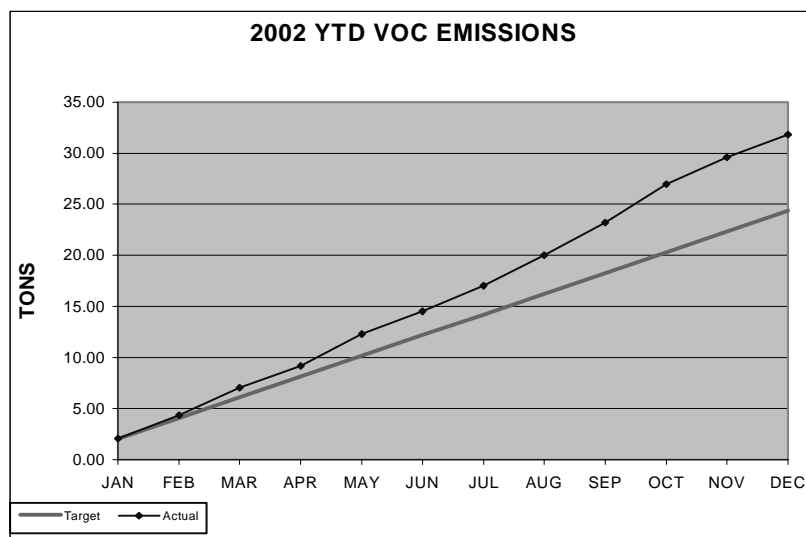
Sparta:

1. OBJECTIVE: Reduce total facility VOC emissions levels  
TARGET: Maintain monthly VOC emissions at 2002 levels.
2. OBJECTIVE: Reduce total facility HAP emissions levels  
TARGET: Maintain monthly HAP emissions at 2002 levels.
3. OBJECTIVE: Reduce energy consumption.  
TARGET: 2% reduction in the electricity consumption CY 2003 vs. CY 2002  
TARGET: Review current natural gas utilization. Target pending; review to be completed by 4/30/03.
4. OBJECTIVE: Improve utilization of aluminum  
TARGET: Study the sources of aluminum waste and the opportunities for waste reduction.  
Report to management by 4/30/03.

Holmen:

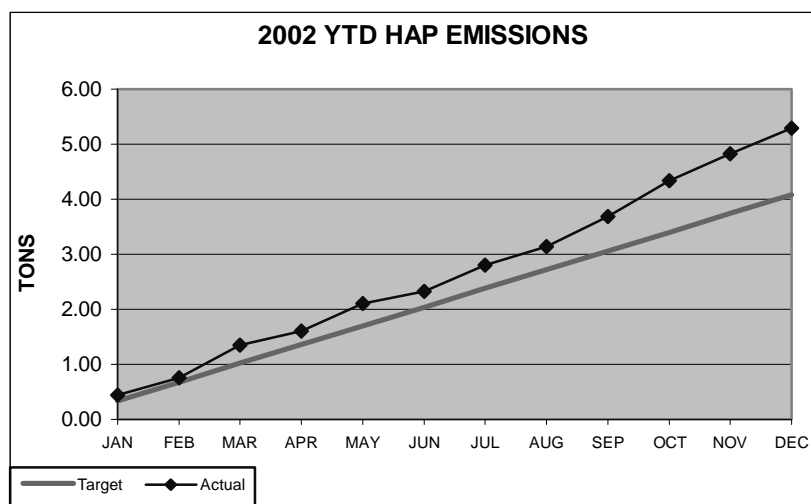
1. OBJECTIVE: Reduce total facility VOC emissions levels  
TARGET: 10% reduction in CY 2003 vs. CY 2002
2. OBJECTIVE: Reduce total facility HAP emissions  
TARGET: 3% reduction in CY 2003 vs. CY 2002
3. OBJECTIVE: Reduce facility energy use  
TARGET: 5% reduction in CY 2003 vs. CY 2002  
TARGET: Maintain CY 2003 electricity use at the CY 2002 level
4. OBJECTIVE: Reduce facility hazardous waste generation  
TARGET: Implement a minimum of two methods to reuse waste ink or solvent by 12/31/2003

The following reflects the progress made towards Sparta's 2002 Environmental Objectives and Targets:



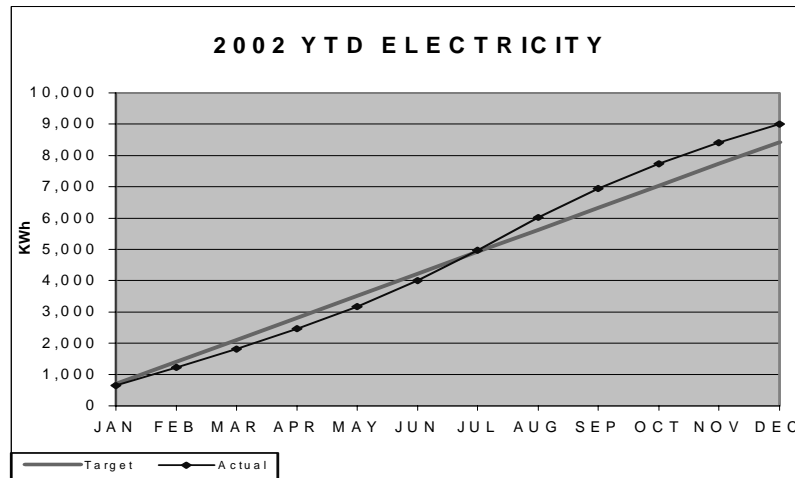
Target: 12% reduction from the 2001 total  
24.38 tons/year or 2.03 tons/month VOC's

	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
Actual VOC YTD	2.07	4.33	7.07	9.18	12.28	14.50	17.05	20.00	23.23	26.98	29.60	32.5
Target VOC	2.03	4.06	6.09	8.12	10.15	12.18	14.21	16.24	18.27	20.30	22.33	24.36



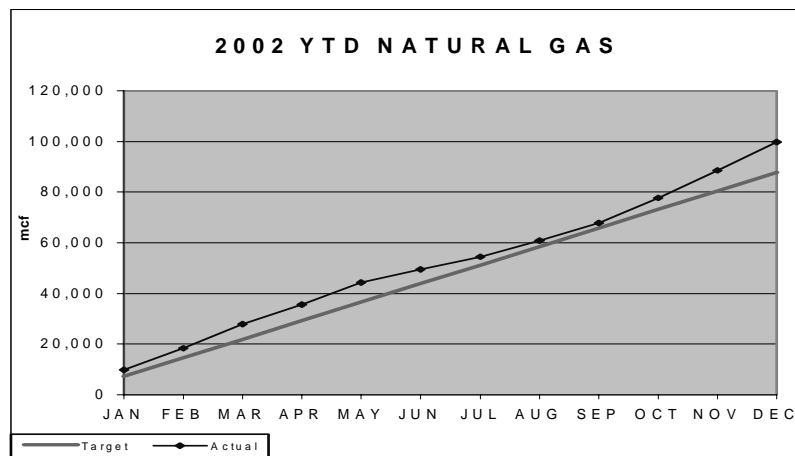
Target: 5% reduction from the 2001 total.  
4.08 tons/year or 0.34 tons/month HAP's

	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
Actual HAP YTD	0.44	0.76	1.35	1.60	2.10	2.33	2.80	3.14	3.69	4.34	4.82	5.41
Target HAP	0.34	0.68	1.02	1.36	1.70	2.04	2.38	2.72	3.06	3.40	3.74	4.08



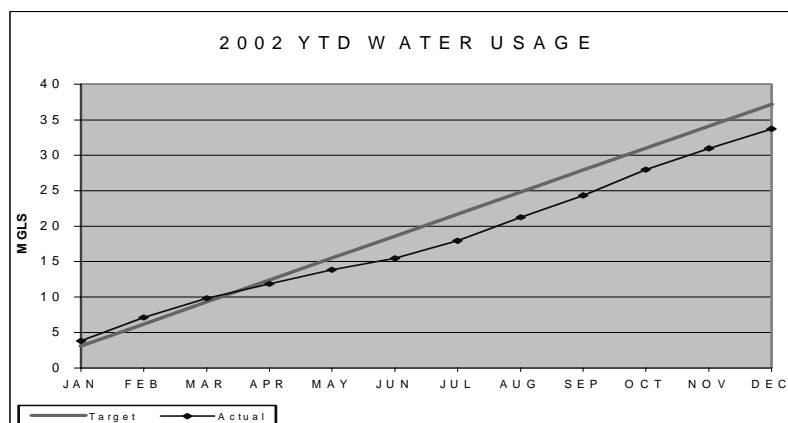
Target: 5% Reduction from the 2001 total  
8,440,587 KWH/year or 703,382 KWh/month of electricity consumption

	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
Actual Electricity (1000 kWh) YTD	646	1,220	1,822	2,468	3,173	4,011	4,970	6,022	6,946	7,744	8,418	9,005
Target Electricity (1000 kWh) YTD	703	1,406	2,109	2,812	3,515	4,218	4,921	5,624	6,327	7,030	7,733	8,436



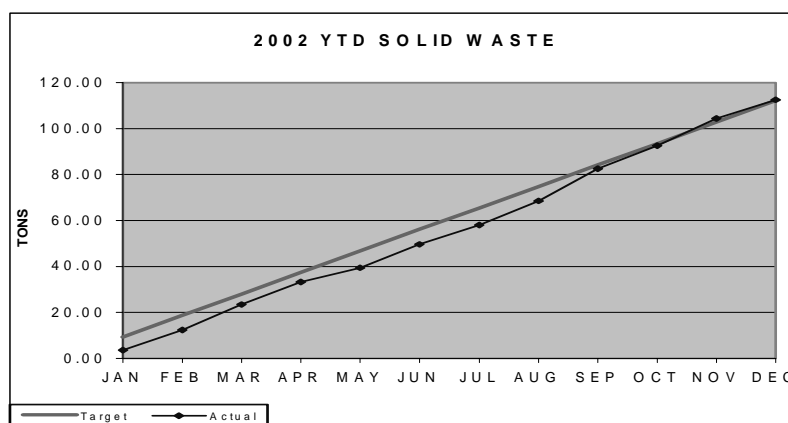
Target: 5% Reduction from the 2001 total  
87,770 MCF/year or 7,314 mcf/month of natural gas consumption

	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
Actual Natural Gas YTD	9,808	18,318	27,840	35,529	44,283	49,524	54,504	60,869	67,909	77,786	88,496	99,778
Target Natural Gas	7,314	14,628	21,942	29,256	36,570	43,884	51,198	58,512	65,826	73,140	80,454	87,768



Target: 20% reduction from the 2001 total.  
 37.197 M (million) gallons/year or 3.100 M (million) gallons/month of water used

	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
Actual Water usage YTD	3.823	7.098	9.814	11.855	13.871	15.469	17.928	21.250	24.318	27.990	30.960	33.725
Target Water usage	3.100	6.200	9.300	12.400	15.500	18.600	21.700	24.800	27.900	31.000	34.100	37.200



Target: 10% reduction from the 2001 total.  
 112.30 tons/year or 9.35 tons/month Solid waste

	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>	<u>APR</u>	<u>MAY</u>	<u>JUN</u>	<u>JUL</u>	<u>AUG</u>	<u>SEP</u>	<u>OCT</u>	<u>NOV</u>	<u>DEC</u>
Actual Solid Waste YTD	3.59	12.36	23.39	33.33	39.49	49.68	58.00	68.51	82.54	92.58	104.36	112.49
Target Solid Waste	9.35	18.70	28.05	37.40	46.75	56.10	65.45	74.80	84.15	93.50	102.85	112.20

A Historical Performance Comparison for the Holmen Facility:

	VOCs	HAPs	Landfill Waste	Natural Gas	Electricity
2002 vs. 2000	-11%	-10%	-19%	15%	- 5%
2001 vs.2000	23%	-17%	2%	-12%	10%

A Historical Performance Comparison for the Sparta Facility:

	VOCs	HAPs	Landfill Waste	Natural Gas	Electricity
2002 vs. 2001	28%	23%	-10%	8%	2%
2001 vs.2000	-16%	-23%	-11%	-15%	- 4%

Examples of environmental activities resulting in environmental gains corresponding to the objectives and targets for the Sparta facility:

- Purchased a centrifuge to remove solvent from towels. Most of the solvent is being recycled and reused.
- Where feasible, converted to low VOC containing materials.
- Changed to non-HAP containing thinners and cleanup solvents.
- Where feasible, replaced inks and coatings with lower HAP substitutes.
- Eliminated unnecessary wash-ups.
- Encouraged employees to reduce the amount of solvent used and made it easier to do the right thing.
- Changed the means of dispensing some solvents thereby controlling the amount of solvent used.
- Increased the efficiency of production lines by finding alternate means of producing samples for customers.
- Developed a list of actions that could quickly result in energy savings.
- Conducted an energy audit.
- Expanded the recycling of solid wastes.

Since 1996, the Sparta facility has reduced annual VOC and HAP emissions an average of 10.3 tons and 5.2 tons, respectively. The 2002 emission represent the first yearly increases in six years and reflect the tremendous changes in product type and equipment that occurred at the facility during the second half of 2002. Through programs designed to meet the stated objectives and targets, the environmental management system is identifying resources, focusing managerial attention and engendering innovation to meet these new challenges in environmental stewardship.

Over the past six years, Holmen's VOC and HAP emissions have been reduced an average of 2.5 tons/year and 1.7 tons/year. An environmental management system was initiated in 2002, and the facility is actively pursuing its 2003 objectives and targets. It will undergo an external environmental audit to international standard, ISO 14000, in July 2003.

A summary of air emissions and hazardous waste generation for the Holmen and Sparta facilities follows:

### Hazardous Waste Generation

<b>HOLMEN</b>	<b>Unit</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Solvent Waste	gallons	3,224	2,548	3,068	2,338	1,354	1,485	1,375
Ink Waste	gallons	1,705	1925	1485	1650	1760	1,815	1,540
Holmen Total	gallons	4,929	4,473	4,553	3,988	3,114	3,300	2,915

<b>SPARTA</b>	<b>Unit</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
Solvent Waste	gallons	9,374	5,388	4,309	1,762	439	1,265	1,705
Liquid Coating Waste	gallons	8,470	4565	2200	1678	1210	825	935
Solid Coating Waste	gallons	1,650	1045	852	1045	1169	715	660
Ink Waste	gallons	1,540	1375	1072	729	798	550	550
Norlens Waste	gallons	605	478	522	358	0*	0*	0*
Alodine Sludge	gallons	NA	385	0	220	138	110	0
Still bottoms	gallons	NA	NA	NA	165	385	495	660
Hydroxide Sludge	tons	53.8	0*	0*	0*	0*	0*	0*
Sparta Total	gallons	21,639	13,236	8,955	5,957	4,139	3,960	4,510
	tons	53.8	NA	NA	NA	NA	NA	NA

\* Because of process changes, this waste is no longer classified as a hazardous waste.

### Air Emissions

<b>HOLMEN</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
VOCs (tons/year)	40.5	33.6	27.0	24.6	23.6	29.0	25.7
NOx	0.95	1.20	0.98	1.02	0.98	0.85	1.07
CO	0.20	0.19	0.20	0.20	0.20	0.17	0.21

### HAP CHEMICALS (lb/yr.)

CHEMICAL NAME	CAS #							
Glycol Ethers	NA	9,792	9,073	8,987	8,674	8,077	8,080	6,893
Cumene	98-82-8	351	0	3	14	17	29	11
Ethyl Benzene	100-41-4	0	322	11	23	3	5	56
n-Hexane	110-54-3	0	238	414	102	86	86	391
Isophorone	78-59-1	1,291	36	628	737	225	5	2
MEK	78-93-3	3,104	2,017	3,403	1,513	1,111	330	82
MIBK	108-10-1	58	0	0	15	0	0	0
Naphthalene	90-20-3	49	113	63	158	7	15	50
Toluene	108-88-3	13,491	13,618	3,778	152	307	62	88
Xylene	1330-20-7	507	3,418	1,541	910	1,031	406	523
TOTAL (tons)		14.32	14.42	9.41	6.15	5.43	4.51	4.05

<b>SPARTA</b>	<b>1996</b>	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>
VOCs (tons/year)	94.3	72.0	33.4	32.0	30.3	25.4	32.5
NOx	5.68	7.63	5.13	4.02	4.74	4.62	5.02
CO	1.21	1.66	1.99	2.75	2.93	2.63	2.08

### HAP CHEMICALS (lb/yr.)



CHEMICAL NAME	CAS #							
Glycol Ethers	NA	9,877	12,490	3,704	4,900	5,910	4,003	4,767
Cumene	98-82-8	258	101	178	67	42	182	12
Dimethylformamide	68-12-2	84	819	435	0	0	0	0
Ethyl Benzene	100-41-4	3,210	2,587	1,204	895	771	577	831
Formaldehyde	50-00-0	8	2	3	2	3	4	6
Hydrogen Fluoride	7664-39-3	140	140	252	314	305	265	197
Isophorone	78-59-1	1,085	3,917	1,986	983	558	314	338
Methyl Alcohol	67-56-1	204	187	112	84	57	31	95
MEK	78-93-3	13,859	11,532	1,753	867	923	540	232
MIBK	108-10-1	7,248	4,094	84	136	168	84	138
Methylene Chloride	75-09-2	2,201	2,351	5,089	0	0	0	101
Naphthalene	91-20-3	202	1,565	387	81	120	76	223
Perchloroethylene	127-18-4	2,152	2,398	1,665	0	0	0	55
2,2,4 Trimethylpentane	540-84-1	0	0	0	0	0	0	184
Toluene	108-88-3	21,636	16,431	844	736	245	315	171
Xylene	1330-20-7	11,297	4,722	2,749	4,805	2387	2,429	3,468
TOTAL (tons)		36.73	31.67	10.22	6.94	5.74	4.42	5.41

Neither the Holmen nor the Sparta facility received any citizen environmental complaints in 2002.

The Sparta facility received a Notice of Noncompliance with hazardous waste rules following 11/26/2002 and 12/12/2002 inspections. These issues were resolved and Northern Engraving received letters of resolution on 12/12/2002 and 1/7/2003 respectively.

### **Regarding Operational Flexibility:**

Time saved in obtaining permits:

Since the signing of this agreement on June 10, 2002, one construction permit was requested. It allowed NEC to begin construction 10 days later, saving approximately 45 days.

Time saved under the Cooperative Agreement by the reduction in record keeping requirements and administrative requirements:

#### Requirement Eliminated:

- Daily calculations for demonstrating RACT compliance
- Daily calculation of VOC and HAP emissions
- Compiling formulas for demonstrating LACT compliance
- Reduced number of requirements in the operating permits (Holmen and Sparta) lessened the time required to submit the Summary of Monitoring Requirements and Certification of Compliance as required by the operating permits.

#### Approximate Time Saved:

3.5 hours/day  
1.5 hours/day  
20 hours/month  
  
20 hours/year

#### Requirements Added:

- Monthly calculation of propane used – Sparta
- Compiling the 6 Month Interim Report
- Compiling this Baseline Report
- Compiling the Annual Report
- Managing the Stakeholders Group

#### Additional Time Required:

15 minutes/month  
15 minutes/month  
40 hours/year  
40 hours/year  
18 hours/year

NEC experienced the following changes in the management of the air permit program:

- Changes to record keeping saved time, as described in the report.
- Changes to record keeping allowed NEC to eliminate 18 forms, and the elimination of daily calculations will save over 2500 pages of records and reports/year.
- Facility-wide compliance limits are easier to manage than the line specific limits of previous permits.
- Monthly calculation of compliance is based on purchasing data that is reconciled against inventories. This data is generally more accurate than daily usage data.
- A shorter lead-time for construction permits gives NEC the opportunity to clearly define its needs before submitting an application, thereby reducing the need for speculative permitting.

Northern Engraving estimates a 1500 MMCF/month savings in natural gas usage from the shutdown of the incinerator. It was run each year from 1May until 31 September.

### **Regarding Overall Assessment of the Success of the Agreement:**

Northern Engraving has neither sought nor received public recognition or awards for its efforts toward the Cooperative Agreement or the environmental management system.

During development of the Agreement, challenges were met directly and, through the dedicated efforts of individuals in the Department of Natural Resources and Northern Engraving, creative and compliant solutions were discovered. Any success is the direct result of these efforts to forge new and genuinely innovative approaches that will, in time, dramatically improve the regulation of industry and open the creative stream of ideas to improve resource utilization and pollution prevention.

As we complete the first six months of the Agreement, the Department of Natural Resources and Northern Engraving continue to work together to improve communications and understanding of each other's needs and requirements. In light of this early success, we are working together to add the West Salem and Galesville facilities to the Agreement through amendment. Within 180 of the finalization of the amendment, NEC will submit a baseline report for each facility. The 2003 report will then include the manufacturing facilities at Sparta, West Salem, Holmen and Galesville.

Questions and requests for additional information should be directed to Bruce Corning at the address below:

Northern Engraving Corporation  
803 Black River Street  
Sparta, Wisconsin 54656

Glossary:

VOCs - Volatile Organic Compounds: Organic materials that evaporate into the air.

Examples: Solvents used for clean up or thinner and solvents present in coatings, inks and sprays.

HAPs - Hazardous Air Pollutants: A group of 189 chemicals listed by the EPA. These chemicals are believed to carry a greater health risk.

Examples: Toluene, Xylene, Glycol Ethers, etc.

mcf - thousand cubic feet: The standard measure of volume of natural gas used.

KWh - kilowatt-hours: The standard measure of electricity used.

YTD – Year-to-Date